Problem solving and practice: C++ Assignment:3

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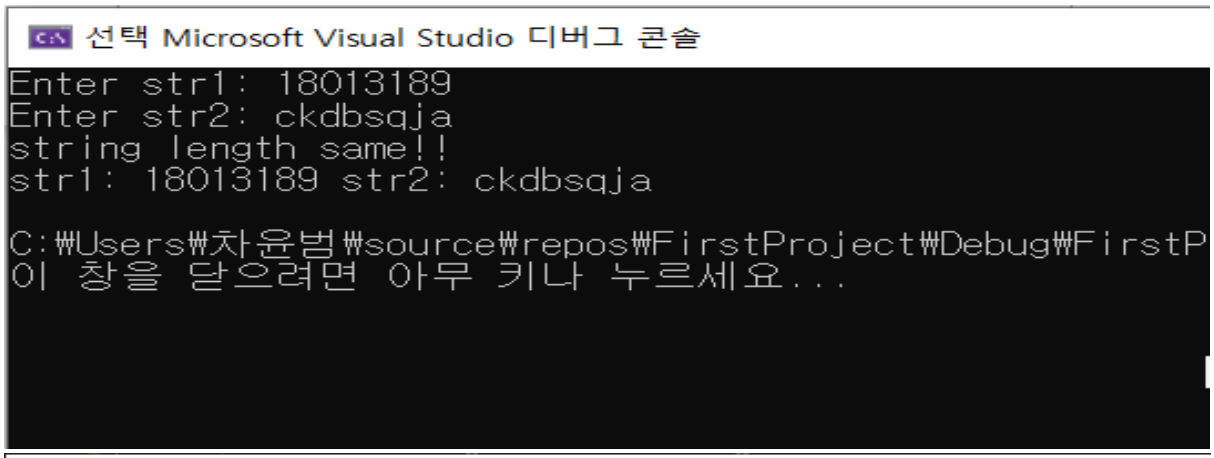
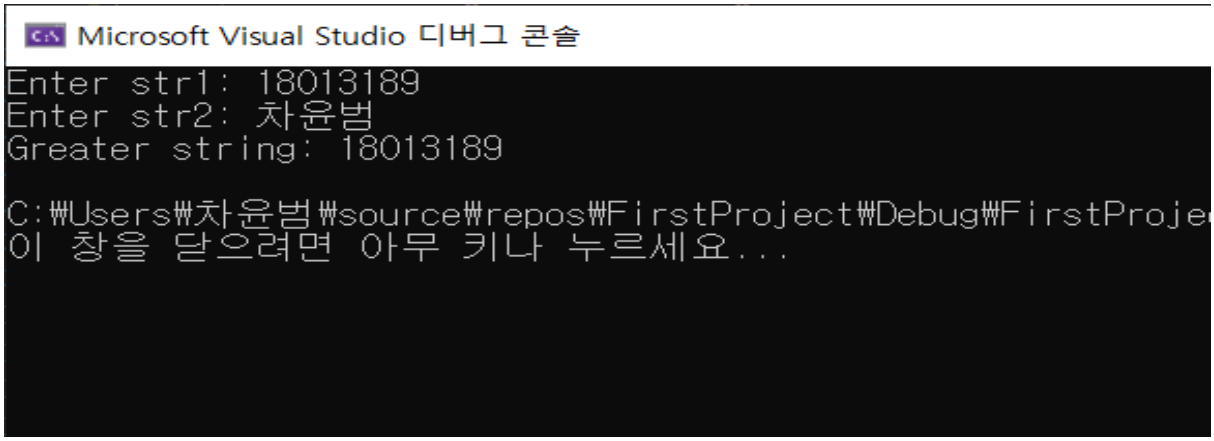
Problem1

```
#pragma warning(disable : 4996)
#include <iostream>
#include <string.h>
#include <cstring>
using namespace std;
//Forward declaration of test2
class test2;
class test1{ //test1
    int len;
    char str[101];
public:
    void getA(){
        cout << "Enter str1: ";
        cin >> str;
    }
    //Friend to both classes
    friend void operator>(test1, test2);
};
class test2{
    char str[101];
public:
    void getB(){
        cout << "Enter str2: ";
        cin >> str;
    }
    //Friend to both classes
    friend void operator>(test1, test2);
};
//declaration of operator >
void operator>(test1 t1, test2 t2){
    //using the strlen() function
    if (strlen(t1.str) < strlen(t2.str)){
```

```
        cout << "Greater string: " << t2.str << endl;
    }
    else if (strlen(t1.str) > strlen(t2.str)){
        cout << "Greater string: " << t1.str << endl;
    }
    else{
        cout << "string length same!!" << endl;
        cout << "str1: " << t1.str << " str2: " << t2.str << endl;
    }
}
int main(){
    //declaration of class object
    test1 t1;
    test2 t2;
    //get function
    t1.getA();
    t2.getB();
    //operator >
    t1 > t2;
}
```

Problem1 output screen



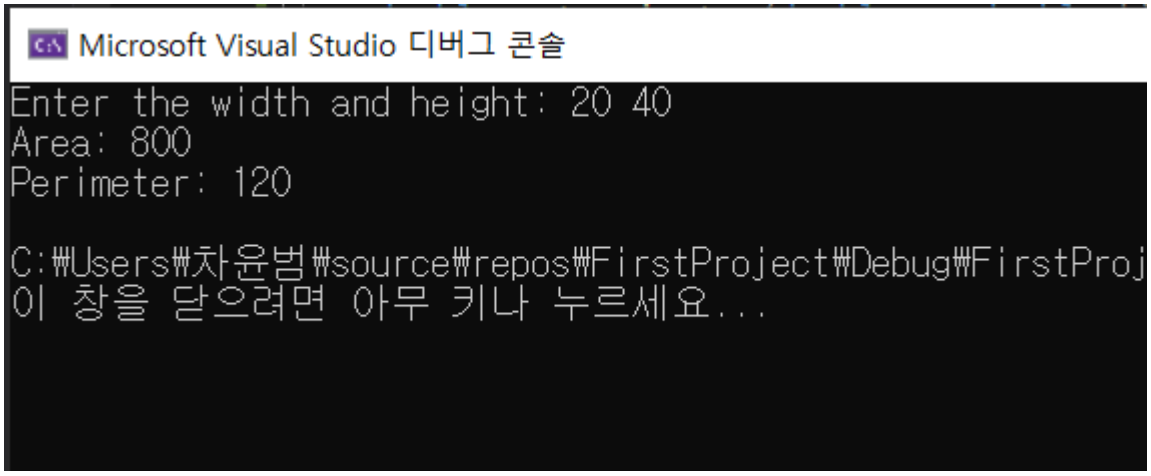


Problem2

```
#pragma warning(disable : 4996)
#include <iostream>
#include <string.h>
#include <cstring>

using namespace std;

class Area { //declaration of Area class
public:
    double getArea(double w, double h) {
        return w * h; //calculate Area
    }
};
class Perimeter { //declaration of Perimeter class
public:
    double getPerimeter(double w, double h) {
        return (w + h) * 2; //calculate Perimeter
    }
};

class Rectangle : public Area, public Perimeter
{ //Area, Perimeter class multiple inheritance
    double w, h;
public:
    //input
    void getlength() {
        cout << "Enter the width and height: ";
        cin >> w >> h;
    }
    //output
    void show() {
        cout << "Area: " << getArea(w, h) << endl;       //Area
        cout << "Perimeter: " << getPerimeter(w, h) << endl; //Perim
eter
    }
};
int main() {
```

```
    Rectangle obj; //declaration of class object

    //input
    obj.getlength();
    //output
    obj.show();
    return 0;
}
```

Problem 2 output screen

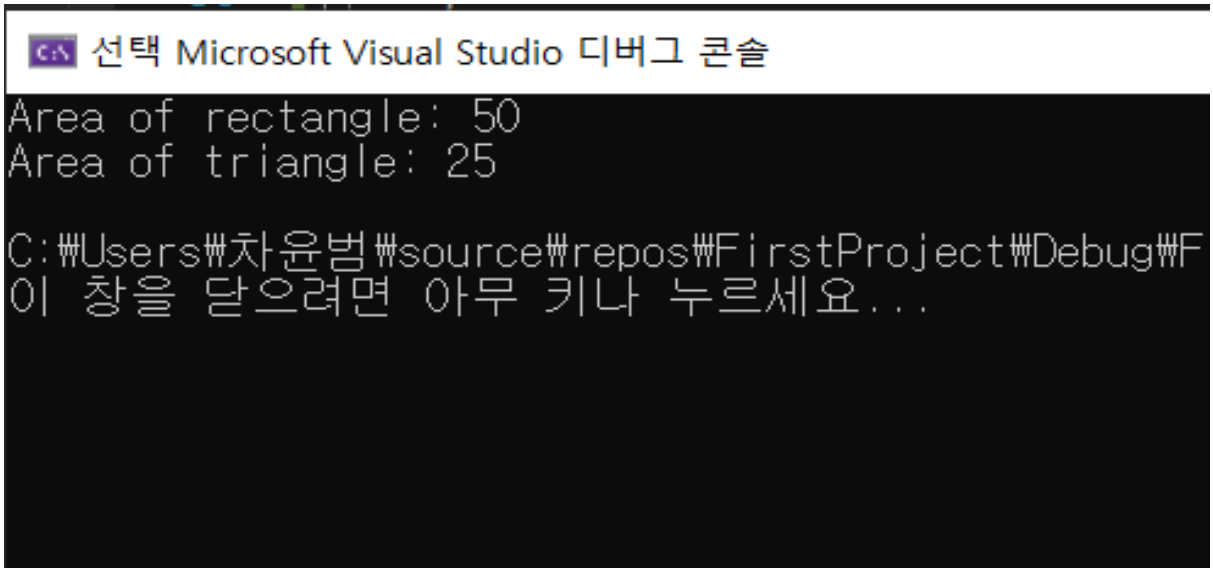


Problem3

```
#pragma warning(disable : 4996)
#include <iostream>
#include <string.h>
#include <cstring>

using namespace std;

class shape{ //declaration of shape class
protected:
    double h, w;
public:
    void setValues(double height, double width){ //set Values(height
, width)
        h = height;
        w = width;
    }
    double getHeight(){ //get height
        return h;
    }
    double getWidth(){ //get width
        return w;
    }
};
//Define two classes rectangle and triangle that inherit those featu
res from class shape.
class Rectangle : public shape{
public:
    //Calculate and return area of rectangle
    double getArea(){
        return h * w; //Rectangle Area
    }
};
class Triangle : public shape{
public:
    //Calculate and return area of triangle
    double getArea(){
        return h * w / 2; //Triangle Area
```

```
    }
};
int main(){
    //declaration of class object;
    Rectangle rect;
    Triangle tri;
    //valid and allows us to access the members of their pointed obj
ects
    shape *r = &rect;
    shape *t = &tri;

    //set data in object
    r->setValues(5.0, 10.0);
    t->setValues(5.0, 10.0);
    //output
    cout << "Area of rectangle: " << rect.getArea() << endl;
    cout << "Area of triangle: " << tri.getArea() << endl;
}
```

Problem 3 output screen



Problem4

```
#pragma warning(disable : 4996)
#include <iostream>
#include <string.h>
#include <cstring>

using namespace std;

class animal{ //declaration of animal class
protected:
    char name[101];
    int age;
public:
    void setdata(char b[101]){ //using the strcat() function
        strcat(name, b);
    }
    void getdata(){ //get data
        cout << "Enter name: ";
        cin >> name;
        cout << "Enter age: ";
        cin >> age;
    }
};
//Create two derived classes Zebra and Dolphin from class animal
class Zebra : public animal{
public:
    //output
    void message_zebra(){
        cout << "The zebra name: " << name << endl;
        cout << "The zebra age: " << age << endl;
    }
};
class Dolphin : public animal{
public:
    //output
    void message_dolphin(){
        cout << "The dolphin name: " << name << endl;
        cout << "The dolphin age: " << age << endl;
```

```
    }
};
int main(){
    //declaration of class object
    Zebra z;
    Dolphin d;

    //information
    char origin1[101] = " origin: Africa";
    char origin2[101] = " origin: NewZeland";
    //get data
    cout << "Zebra" << endl;
    z.getdata();
    cout << "Dolphin" << endl;
    d.getdata();
    //extra information
    z.setdata(origin1);
    d.setdata(origin2);
    //output
    z.message_zebra();
    d.message_dolphin();

    return 0;
}
```

Problem 4 output screen